



AIP Annual Forum Opening Remarks

Stephen D. Roberson, Ph.D.

President, National Society of Black Physicists

March 21, 2024



Dr. Stephen Roberson
President



Dr. Paul Gueye
Past-President



Dr. Bryan Kent Wallace
Treasurer



Dr. Garfield Warren
Administrative Executive Officer



Dr. Carol Scarlett
Technical Executive Officer



Ms. Tracy Edwards
Student Representative



Aligning Organization Mission with Values

Strong Mission Statement that tells who we are and we do. This is our why.

Organization-wide set of values that are clearly communicated. This is our how.

Activities that are consistent with our mission and our values. This is our what.

Consistent execution with matching communication engenders confidence in our members, supporters, and the outside community. Over time, this builds trust.

Separating science and social issues - how do we decide what social issues are to be addressed by the organization?

Diversity / Intersectionality - how do we address people who feel marginalized within the organization

Bullying and Harassment - how to we as an organization deal with people that are not following established codes of conduct?

Whistleblowers - how to do we look out for people that report wrongdoing that potentially harm the organization?



Example: Optica's relationship with NSBP

Optica's mission is to promote the generation, application and archiving of knowledge in optics and photonics and to disseminate this knowledge worldwide.

Optica's Core Values: Innovation, Integrity, Inclusivity, Impact.

Been a strong supporter of NSBP for many years.

Many NSBP members are Optica members and are highly respected in the organization. One former NSBP president was even OSA president (Dr. Anthony Johnson).

Optica offered their support and space for our new HQ, NSBP agreed.



ATTENTION PHYSICS STUDENTS: You Have Options

Q: What can you do with a physics degree?

A: Get a PhD and become a physics professor OR ...

What comes after the "or" is not widely known in many physics departments, even though data show that less than a third of physics bachelor's degree recipients enroll in a physics or astronomy graduate program within one year of graduating. People with bachelor's or graduate degrees in physics pursue a variety of fascinating, fulfilling, and well-paying careers. This is evidenced by decades of data collected by the Statistical Research Center at the American Institute of Physics. Illustrated below are the common paths of physics bachelor's recipients based on the most recent data. Unless otherwise indicated, all data are for graduates of US physics programs who remain in the United States.

Over 8,400 physics bachelor's degrees were awarded in the class of 2015-16.

A record high! Typically...

- Three-fourths of those who earn physics bachelor's degrees have research experience.
- One-third graduate with a double major (many in math).
- One-third start at two-year colleges.

Within one year of earning a physics bachelor's degree...

20% enroll in graduate programs other than physics or astronomy or in professional degree programs.

- About half enter an engineering program, the rest enter programs in math, medicine, education, or another field.¹
- As a group, physics majors score among the highest of all majors on medical school and law school admission tests the MCAT and LSAT.²
- Students in professional degree programs are more likely to be self-funded than students in research-based graduate programs, who usually have teaching assistantships, research assistantships, or fellowships.³

~30% attend graduate school in physics or astronomy.⁴

- About 3/4 enroll in a PhD program; the remainder choose a master's degree program.⁵
- Most are fully supported by teaching assistantships, research assistantships, or fellowships.

Of those who start graduate school in physics or astronomy...

~50% enter the workforce.⁶
Common employment sectors include:

- Private sector**
- ~2/3 of those who enter the workforce take jobs in the private sector.
 - Of those that enter the private sector, the large majority hold science, technology, engineering, and math (STEM) positions.⁷
 - Those in private sector STEM positions are well-compensated, with a median starting salary of about \$57K.

Colleges or universities

- More than half of the students in these positions were employed at the same institution they graduated from. Many work in research or IT.

Civilian government

- The civilian government sector includes national labs. The vast majority of these positions are in STEM fields, many related to defense or energy.

Active military

- Physics bachelor's work across all branches of the armed forces. Many work in aviation or nuclear power.

High school teaching

- About a quarter of the high school teachers indicated that their undergraduate degree had a high school physics teaching focus.

The Statistical Research Center does not formally follow the career paths of these individuals, but we hear that they go on to successful careers in engineering, management, education, law, medicine, business, and a variety of other areas.

Add to the mix:

Foreign citizens coming to the United States for a graduate degree, students who earned bachelor's degrees in another field but went a graduate degree in physics, and students who earned a physics bachelor's degree in previous academic years.

~1 out of 6 US physics bachelor's receive a physics or astronomy PhD.⁸

- A doctorate in physics takes an average of 4-7 years.
- Most PhD students are fully supported by teaching or research assistantships or fellowships.⁹

Within one year of earning a physics PhD...

~1 out of 12 US physics bachelor's receive an exiting physics or astronomy master's degree.¹⁰

Exiting master's degree recipients are individuals who leave their current department upon receiving a master's degree. Many other students earn an in route master's degree, continuing on to a physics PhD in the same department.

- Over half of those who earn exiting master's degrees do so with a specific research focus.¹¹
- A master's degree in physics usually takes about two years.

For US citizens, within one year of earning an exiting master's degree...

~1/2 enter the workforce.¹²

- About half work in the private sector, virtually all in STEM fields.
- The largest portion of exiting master's working in the private sector are employed in the field of engineering.
- Other common employment sectors for exiting master's include colleges and universities, high schools, and civilian government.

~1/2 continue with graduate studies.¹³

- Most transfer to other institutions to earn a physics PhD.
- Others transfer to programs in related fields such as materials science, engineering, medical physics, and mathematics.

~1/2 accept a temporary position (e.g., a postdoc), primarily at a university or with the government.¹⁴

~40% accept a potentially permanent position.¹⁵

- ~1/4 of new PhDs accepting potentially permanent positions are employed in the private sector.
- The median starting salary for new-physics PhDs employed in the private sector is \$109K.

Employment sectors of physics PhDs 10-14 years since receiving their degree.

- 40% Private sector
- 43% Academic
- 6% Government
- 6% Other

References and Notes

The following data references published by the Statistical Research Center of the American Institute of Physics are available online at www.aip.org/statistics.

1. Stan Nicholson and Patrick J. Mulvey, *Master of Physics Departments with Enrollment and Degree Data*, 2016, September 2017.
2. AIP Statistical Research Center, *AIP Physics Trends: Research Experiences of Physics Undergraduates*, Fall 2008.
3. AIP Statistical Research Center, *AIP Physics Trends: Physics Students After Grad Interners*, Spring 2011.
4. Susan White and Raymond Chu, *Physics Doctorates in New Year Classes*, April 2013.
5. AIP Statistical Research Center, *Data from Follow-up Survey of Physics Bachelor's, Master's, and PhDs*, www.aip.org/statistics/physics.
6. Carey Langer Tzuya and Patrick Mulvey, *MCAT, LSAT and Physics Bachelor's*, December 2016.
7. Patrick J. Mulvey and Stan Nicholson, *Trends in Physics PhDs*, February 2014.

*All data generated by the AIP Statistical Research Center, Summer 2014.

Learn more at the Careers Toolbox website:
www.spsnational.org/careerstoobox

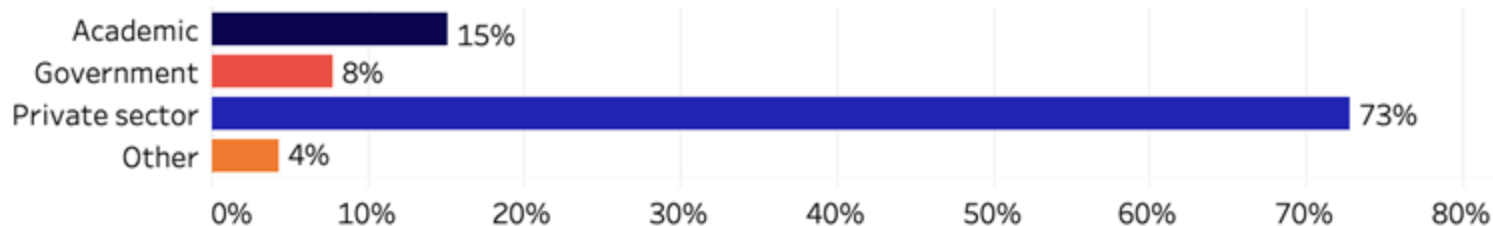


Updated 12/2017



Reaching non-academic audiences

All Employment Sectors:



Takeaways

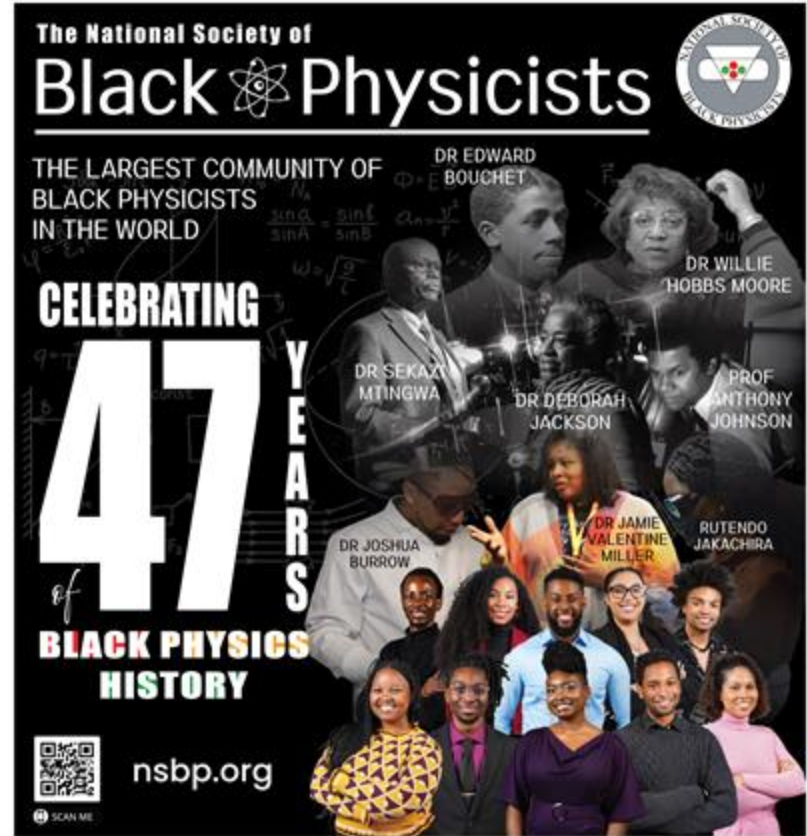
- 7 out of 10 physics graduates don't go to graduate school.
- 1 in 6 graduate with a Ph.D.
- Most physics graduates work outside of our traditional target audiences (academia and government research).

We must improve efforts to reach the private sector and physicists without PhDs.

Example: Black History Month 2024

Activities Included:

- Three interviews with seasoned physicists done by students.
- Five student takeovers of the NSBP Instagram account.
- Historical profiles generated by volunteers for Black physicists and scientists.
- Acknowledgements of HBCU physics departments.
- Graduation celebration for students on the NSBP YouTube account.
- Graphic that was displayed in USA Today.





Thank you!!

Scan the QR code below or go to nsbp.org to learn more about NBSP.

